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August 20, 1962

Professor J. Lederberg
Stanford University
Medical Center
Palo Alto, California

Dear Josh:

Joe Lampen forwarded your request for information on pyrimidine and citrulline mutants of E. coli. As you undoubtedly know, I have strayed from work in this area but will try to supply the information while I am here between absences due to meetings and vacation.

We have not published anything on these mutants. However, Yates and Pardee (J. Biol. Chem. 227: 677, 1957) reported some work on a uracil-requiring mutant 550-460 (A.T.C.C. 9723g, formerly A.T.C.C. 11,548) and a mutant (185-482) requiring uracil and citrulline. References to earlier work are cited in this paper. We have two other uracil mutants (40-482 and 969-434) and another uracil-citrulline mutant (823-304). According to my records, I gave you a culture of 823-304 in May 1946.

The three uracil mutants have only partial blocks. With all five mutants either cytosine or isocytosine will support growth in place of uracil although growth with isocytosine is slower. The four strains tested (185-482 was not tested) failed to grow with orotic acid in place of uracil. Tests with orotic acid probably were not conclusive in view of the report (J. Biol. Chem. 221: 743, 1956) that some pyrimidine mutants grow extremely slowly with orotic acid.

The two uracil-citrulline mutants failed to show syntrophism with each other (with either uracil or arginine limiting) or with another strain (550-462) which requires only citrulline. Tests with the other uracil mutants were inconclusive because of their partial block.

As you may recall, reversion of the uracil-citrulline mutants resulted in simultaneous loss of the requirement for both uracil and citrulline whether reversion is obtained by limiting growth with uracil or with

arginine. However, an occasional reverted culture retained a partial requirement for arginine (or citrulline, presumably) in which case the addition of uracil increased the amount of arginine needed for normal growth.

I trust this information will be of use to you. If you plan to work with these mutants, we could probably supply you with some which you are not able to obtain elsewhere. We have had moderate success in recovering viable cultures lyophilized 12-15 years ago.

With best regards,

Sincerely yours,

Roy

R. R. Roepke
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RRR:mak

cc: Dr. J. O. Lampen
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